



Analysis of Technical Specifications

Unit 2

Learning Objective 1

Explain the significance of limiting conditions for operation in the areas of applicability, reactivity control system, instrumentation, the reactor coolant system, and the emergency core cooling systems.

Learning Objective 2

When given an initial set of operating conditions, use technical specifications to determine the appropriate plant and/or operator response.

LCO sections presented

- Applicability
- Reactivity control systems
- Instrumentation
- RCS
- ECCS

LCO 3.0.1

LCOs shall be met during the MODES or other specified conditions in the Applicability, except as provided in LCO 3.0.2.

LCO 3.0.2

Upon discovery of a failure to meet an LCO, the Required Actions of the associated Conditions shall be met, except as provided in LCO 3.0.5 and LCO 3.0.6.

If the LCO is met or is no longer applicable prior to expiration of the specified Completion Time(s), completion of the Required Action(s) is not required unless otherwise stated.

Together, 3.0.1 and 3.0.2 say that there are always three ways to comply with any LCO.

Meet the LCO

OR

Meet the required actions

OR

Be in a MODE or other specified condition in which the LCO does not apply.

There are also two conditions
when it is acceptable to do
none of these three.

- 3.0.5 (demonstration of operability)
- 3.0.6 (inoperability is a result of support system not meeting LCO).

LCO 3.0.3

When an LCO is not met and the associated ACTIONS are not met, an associated ACTION is not provided, or if directed by the associated ACTIONS, the unit shall be placed in a MODE or other specified condition in which the LCO is not applicable. Action shall be initiated within 1 hour to place the unit, as applicable, in:

- a. MODE 3 within 7 hours;
- b. MODE 4 within 13 hours; and
- c. MODE 5 within 37 hours.

LCO 3.0.3

- Exceptions to this Specification are stated in the individual Specifications.
- Where corrective measures are completed that permit operation in accordance with the LCO or ACTIONS, completion of the actions required by LCO 3.0.3 is not required.
- LCO 3.0.3 is only applicable in MODES 1, 2, 3, and 4.

LCO 3.0.4

When an LCO is not met, entry into a MODE or other specified condition in the Applicability shall only be made:

- a. When the associated ACTIONS permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time;
- b. In accordance with appropriate risk evaluation/management;
- c. When an allowance is stated in the individual value, parameter, or other Specification.

This Specification shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

LCO 3.0.4

- Exceptions to this Specification are stated in the individual Specifications.
- “LCO 3.0.4.b is not applicable” means that the CRMP cannot be used to start up the plant when that LCO is not met.
- “LCO 3.0.4.c is applicable” means a plant startup is allowed when the LCO is not met.
- LCO 3.0.4 is only applicable for entry into a MODE or other specified condition in the Applicability in MODES 1, 2, 3, and 4.

LCO 3.0.5

Equipment removed from service or declared inoperable to comply with ACTIONS may be returned to service under administrative control solely to perform testing required to demonstrate its OPERABILITY or the OPERABILITY of other equipment. This is an exception to LCO 3.0.2 for the system returned to service under administrative control to perform the testing required to demonstrate OPERABILITY.

LCO 3.0.6

- When a supported system LCO is not met solely due to a support system LCO not being met, the Conditions and Required Actions associated with this supported system are not required to be entered. Only the support system LCO ACTIONS are required to be entered.

LCO 3.0.6

- This is an exception to LCO 3.0.2 for the supported system. In this event, additional evaluations and limitations may be required in accordance with Specification 5.5.15, "Safety Function Determination Program (SFDP)." If a loss of safety function is determined to exist by this program, the appropriate Conditions and Required Actions of the LCO in which the loss of safety function exists are required to be entered.

LCO 3.0.6

- When a support system's Required Action directs a supported system to be declared inoperable or directs entry into Conditions and Required Actions for a supported system, the applicable Conditions and Required Actions shall be entered in accordance with LCO 3.0.2.

LCO 3.0.7

- Compliance with Test Exception LCOs is optional.

LCO 3.0.8

When one or more required snubbers are unable to perform their associated support function(s) . . .

LCO 3.0.9

When one or more required barriers are unable to perform their associated support function(s) . . .

SR 3.0.1

- SRs shall be met during the MODES or other specified conditions in the Applicability for individual LCOs, unless otherwise stated in the SR. Failure to meet a Surveillance, whether such failure is experienced during the performance of the Surveillance or between performances of the Surveillance, shall be failure to meet the LCO.

SR 3.0.1

- Failure to perform a Surveillance within the specified Frequency shall be failure to meet the LCO except as provided in SR 3.0.3. Surveillances do not have to be performed on inoperable equipment or variables outside specified limits.

SR 3.0.2

- The specified Frequency for each SR is met if the Surveillance is performed within 1.25 times the interval specified in the Frequency, as measured from the previous performance or as measured from the time a specified condition of the Frequency is met.

SR 3.0.2

- For Frequencies specified as "once," the above interval extension does not apply.
- If a Completion Time requires periodic performance on a "once per . . ." basis, the above Frequency extension applies to each performance after the initial performance.
- Exceptions to this Specification are stated in the individual Specifications.

SR 3.0.3

- If it is discovered that a Surveillance was not performed within its specified Frequency, then compliance with the requirement to declare the LCO not met may be delayed, from the time of discovery, up to 24 hours or up to the limit of the specified Frequency, whichever is greater. This delay period is permitted to allow performance of the Surveillance.

SR 3.0.3

- If the Surveillance is not performed within the delay period, the LCO must immediately be declared not met, and the applicable Condition(s) must be entered.
- When the Surveillance is performed within the delay period and the Surveillance is not met, the LCO must immediately be declared not met, and the applicable Condition(s) must be entered.

SR 3.0.4

- Entry into a MODE or other specified condition in the Applicability of an LCO shall only be made when the LCO's Surveillances have been met within their specified Frequency, except as provided by SR 3.0.3. When an LCO is not met due to Surveillances not having been met, entry into a MODE or other specified condition in the Applicability shall only be made in accordance with LCO 3.0.4.

SR 3.0.4

- This provision shall not prevent entry into MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

Let's look at specific LCOs

- 3.1 REACTIVITY CONTROL SYSTEMS

Shutdown Margin

- LCO 3.1.1

Reactivity parameters

- 3.1.2 Core Reactivity
- 3.1.3 Moderator Temperature Coefficient (MTC)

Control Rods

- 3.1.4 Rod Group Alignment Limits
- 3.1.5 Shutdown Bank Insertion Limits
- 3.1.6 Control Bank Insertion Limits
- 3.1.7 Rod Position Indication

Test exceptions

- 3.1.8 PHYSICS TESTS Exceptions — MODE 2

Instrumentation

- 3.3.1 Reactor Trip System (RTS) Instrumentation
- 3.3.2 Engineered Safety Feature Actuation System (ESFAS) Instrumentation
- 3.3.3 Post-Accident Monitoring (PAM) Instrumentation
- 3.3.4 Remote Shutdown System
- 3.3.5 Loss of Power (LOP) Diesel Generator (DG) Start Instrumentation
- 3.3.6 Containment Ventilation Isolation Instrumentation
- 3.3.7 Control Room Emergency Ventilation System (CREVS) Actuation Instrumentation

Reactor Coolant System

- 3.4.1 RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits
- 3.4.2 RCS Minimum Temperature for Criticality
- 3.4.3 RCS Pressure and Temperature (P/T) Limits
- 3.4.4 RCS Loops — MODES 1 and 2
- 3.4.5 RCS Loops — MODE 3

Reactor Coolant System

- 3.4.5 RCS Loops — MODE 3
- 3.4.6 RCS Loops — MODE 4
- 3.4.7 RCS Loops — MODE 5, Loops Filled
- 3.4.8 RCS Loops — MODE 5, Loops Not Filled
- 3.4.9 Pressurizer
- 3.4.10 Pressurizer Safety Valves
- 3.4.11 Pressurizer Power-Operated Relief Valves (PORVs)
- 3.4.12 Low Temperature Overpressure Protection (LTOP) System

Reactor Coolant System

- 3.4.13 RCS Operational LEAKAGE
- 3.4.14 RCS Pressure Isolation Valve (PIV)
Leakage
- 3.4.15 RCS Leakage Detection
Instrumentation
- 3.4.16 RCS Specific Activity

Emergency Core Cooling Systems

- 3.5.1 Accumulators
- 3.5.2 ECCS — Operating
- 3.5.3 ECCS — Shutdown
- 3.5.4 Refueling Water Storage Tank (RWST)
- 3.5.5 Seal Injection Flow

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